

REMARKS

In the Office Action of June 12, 2002 in the above-identified application, Claims 1, 6, 7, 10 and 12 - 16 were rejected. Claims 9 and 11 were objected to. In response, Claims 1, 9 and 11 are amended. Reexamination and reconsideration are respectfully requested in view of the following remarks.

Support for Amendment to Claim 1

Claim 1 is amended to provide that the flexible riser is connected to a fixed point. This amendment is supported by Fig 1A and 1B and by the discussion in the specification that the flexible riser is connected to fixed locations on the sea bottom such as, for example, production wells (see page 1, lines 5 - 10).

Amendment to Claims 9 and 11

The Examiner indicated that Claims 9 and 11 would be allowable if rewritten in independent form. In response, Claim 9 is rewritten in independent form to include the limitations of Claim 1, and Claim 11 is rewritten in independent form to include the limitations of Claim 1 and 10. Accordingly, it is respectfully submitted that these claims are now allowable.

Rejection of Claims 1, 7, 10 and 12 - 16 under 35 U.S.C. §102(b) over Taylor

Claims 1, 7, 10 and 12 - 16 were rejected under 35 U.S.C. §102(b) as being anticipated by Taylor (U.S. Patent No. 4,333,828). The Examiner alleges that regarding Claim 1, Taylor discloses a pipe system for fluid transfer between a surface vessel and a point located below, and discloses a continuously flexible riser connected to the point located below the water surface and a rigid riser connected to the flexible riser at one end and to the surface vessel at the second end. The Examiner alleges that Fig. 1

shows the flexible riser having a length at least equal to half the water depth. Regarding Claim 7, the Examiner alleges that Taylor discloses that the surface vessel pendulously supports a hydraulic transport riser. The Examiner concludes that the support action of the vessel serves as a holding means since the riser is held suspended from the vessel. Regarding Claim 10, the Examiner alleges that Taylor discloses one or more risers, seen as the flexible riser and the rigid riser. Regarding Claim 12, the Examiner alleges that the effect of gravity serves to tension the risers, as well as the weight of the collector, the dump valve and the hydraulic actuator of Fig. 1. Regarding Claims 13 - 16, the Examiner alleges that the method of forming the device is not germane to the issue of the patentability of the device itself. Therefore, the Examiner has not given the limitations of Claims 13 - 16 patentable weight.

This rejection is respectfully traversed. As clarified in the above amendment, the flexible riser of the present invention is attached to a fixed point below the water surface. As discussed on pages 1 - 3 of the specification, the invention is directed towards the problem of connecting an anchored floating support that has freedom of motion with respect to actions of waves, wind, current, etc. to a fixed point at a great water depth below the surface. The flexible riser part lessens the effect of the displacement of the floating support on the pipe. However, in great ocean depths, because of problems such as weight and the possibility of traction and collapse, it is not feasible to use a flexible riser throughout the entire length of the pipe. Therefore, the solution arrived at in the present invention is to provide a pipe having a rigid upper end and a flexible lower end connected to a fixed point and providing that the rigid part has a length of at least half of the water depth.

Taylor discloses only a pipe that is connected to a mobile collector that "sweeps or traverses a particular area of the ocean floor" (see column 5, lines 34 - 35). The reference does not disclose or suggest a pipe connected to a fixed point below the

surface. Further, Taylor does not deal with problems relating to having a pipe connected to a floating support on one end and a fixed point on the other.

Moreover, there is no basis for the Examiner's allegation that Fig. 1 of Taylor shows a flexible riser having a length at least equal to half the water depth. Figure 1 of Taylor contains no teachings whatsoever regarding the relative length of the rigid riser or the flexible riser. Both the riser 16 and the riser 26 are shown with break lines, indicating that the length of each is undetermined. Moreover, it is most probable that the drawing was laid out in the manner that it was in order to focus attention on the dump valve to which the patent primarily relates. Accordingly, Taylor does not teach or suggest a pipe having a rigid upper end and a flexible lower end connected to a fixed point and wherein the rigid part has a length of at least half of the water depth

Moreover, since Taylor does not deal with problems relating to having a pipe connected to a floating support on one end and a fixed point on the other, Taylor contains no teaching or suggestion regarding a method of designing such a pipe, as in the present method claims 13 - 16.

Accordingly, it is respectfully submitted that Claims 1, 7, 10 and 12 - 16 are not anticipated by, nor would they have been obvious over, Taylor.

Rejection of Claim 6 under 35 U.S.C. §103(a) over Taylor in view of Willis

Claim 6 was rejected under 35 U.S.C. §103(a) over Taylor in view of Willis. The Examiner alleges that Taylor discloses the limitations of the claimed invention except for heat insulation means placed on at least the rigid part and/or the flexible part. Willis is cited for teaching thermally insulating compositions and a method of insulating pipeline bundles and pipeline riser caissons. The Examiner alleges that it would have been obvious to modify the rigid or flexible part of Taylor to have heat insulation.

This rejection is respectfully traversed. As discussed above, Taylor does not disclose or suggest a pipe connected to a fixed point below the surface, does not disclose or suggest a pipe having a rigid part has a length of at least half of the water depth and does not disclose or suggest a method of designing a pipe. Willis does not supply these missing features of the present invention. Accordingly, it is respectfully submitted that Claim 6 would not have been obvious over Taylor alone, or in combination with Willis.

Conclusion


In view of the foregoing amendments and remarks, it is respectfully submitted that Claims 1 and 6 – 7 and 9 - 16 are allowable. Favorable reconsideration is respectfully requested.

Should the Examiner believe that anything further is necessary to place this application in condition for allowance, the Examiner is requested to contact applicants' undersigned attorney at the telephone number listed below.

Kindly charge any additional fees due, or credit overpayment of fees, to Deposit Account No. 01-2135 (612.37981CX1).

Respectfully submitted,

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Attachment: Marked-up Copy To Show Changes Made

MARKED-UP COPY TO SHOW CHANGES MADE

IN THE CLAIMS:

1. (Four times amended) A pipe for great water depths (D) allowing transfer of a fluid between a floating support (1) and a fixed point located below and at a distance from the water surface, characterized in that it comprises:

a continuously flexible riser part (7) connected, at one end, to the fixed point located below the surface, and

a rigid riser part (6) connected to the flexible riser part at one end and to the floating support at the second end thereof,

said rigid riser part (6) having a length at least equal to half the water depth.

9. (Three times amended) ~~A pipe as claimed in Claim 1,~~ A pipe for great water depths allowing transfer of a fluid between a floating support and a point located below and at a distance from the water surface, characterized in that it comprises:

a continuously flexible riser part connected, at one end, to the point located below the surface, and

a rigid riser part connected to the flexible riser part at one end and to the floating support at the second end thereof,

said rigid riser part having a length at least equal to half the water depth,

wherein the pipe is an injection pipe or line and characterized in that the rigid riser part is connected to a source of fluid to be injected and the flexible riser part is connected to a point where the fluid is to be injected

11. (Three times amended) ~~A system as claimed in claim 10,~~ A system for producing petroleum effluents in great water depths allowing fluid transfer between a floating support and a source of effluents, characterized in that the system comprises at least one or more risers and/or one or more injection lines, and wherein each of the one or more risers and/or one or more injection lines is a pipe for great water depths (D) allowing transfer of a fluid between a floating support (1) and a point located below and at a distance from the water surface, characterized in that it comprises:

a continuously flexible riser part (7) connected, at one end, to the point located below the surface, and

a rigid riser part (6) connected to the flexible riser part at one end and to the floating support at the second end thereof,

said rigid riser part (6) having a length at least equal to half the water depth,

further comprising a catenary anchor system (10) applied to the rigid riser part in the vicinity of the junction and/or of connector (8) between flexible riser part (7) and rigid riser part (6).